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APPARATUS FOR PRODUCING LOW BIREFRINGENCE PLASTIC FILM AND SHEET

ABSTRACT

An apparatus for producing a thermoplastic film having low-birefringent, low stress and at least one polished surface for optical media applications as well as low stress film for non-optical applications using a continuous extrusion process. The apparatus consists of a novel calendering roll in a calendering roll stack wherein, at least one roll consists of an inner steel shell, a resilient covering over the inner steel roll and a multi-layer metal sleeve outer covering of at least two layers. The metal sleeve preferably consists of three layers. The inner layer of the multi-layer outer sleeve is preferably nickel, the intermediate layer is preferably copper and the outer layer is preferably chrome with a highly polished surface.

The film produced by the process has a retardation value (birefringence times thickness) of less than about 100 nanometers and a surface roughness of less than about 4 microinches. The process is a continuous extrusion process for producing such film or sheet and does not require any further finishing operations.